			SORCE	B 04
B 13 PREV	ENTIVE FIRE PROTI	ECTION / FIRE FIGHTING		B 01
4 systems for the pre- barracks buildings.	ventive fire protection a	and/or fire fighting will be used in the		B 02
Sprinkler system				
 Extinguishing d Dry lines acc. to 	o DIN 14461-2			D 00
4. Hydrants in exte				B 03
B 13.1 Sprin	kler Systems			
B 13.1.1 Basis Basis for the dimens		rstem are the guidelines of National		B 04
	iation NFPA 13 and of	NFPA 13R (for apartment buildings	NFPA 13	
Basement and attic do See also Fig. 13.1	o not belong to the occ	cupied floors.		B 05
_	applicable for the din	nensioning of sprinkler system in the		B 06
basement as well as i		3 1 ,		
The apartment floors	will be dimensioned ac	cc. to NFPA 13 R.	NFPA 13R	D 07
The requirements of Military Handbook 1008C of US Ministry of Defense regarding apartment buildings, of Uniform Building Code as well as of NFPA			MHB 1008C	B 07
13R are fulfilled.	bullulings, or officially	building code as well as of Ni FA		
The goal is to install a	sprinkler system in th	ne facility.		B 08
Fig. 13.1 Sphere of	responsibility of sta	ndards - floor		
				B 09
F60	NFPA 13			
DG F90		-		B 10
OG COMPANY	NFPA 13R			
OG Trans	1	-		B 11
	NFPA 13R			
OG Varan	1	-		B 12
	NFPA 13R			
EG	NFPA 13R	-		D 40
577	NEFA ISK	_		B 13
KG	NFPA 13			
C. J. C.	4	-		B 14
				B 15

USAREUR - Restoration Program of Troop Billets - Standard 1+1 SORCE **B** 01 B 13.1.2 **Term Determination Fire Separation Area** The fire separation area will be used for determination of quantity of sprinklers effective at the same time in an area. **B** 02 It is defined via an area with complete enclosure of walls as well as ceiling. The fire separation area can have openings to adjacent areas as far as the B 03 opening shows a minimum lintel depth of 203 mm from the ceiling and/or below suspended ceilings. The maximum opening size is 4.6 m². The rooms shall have walls with a fire rating of at least 30 minutes between **B** 04 corridor and fire section. The area within the fire separation area is max. 46 m². B 05 Fig. 13.1.2 Definition fire separation area **B** 06 Sturz mind. 203mm **B** 07 **B** 08 Abschnitt 1 **B** 09 Abschnitt 2 **B** 10 Listed **B** 11 All systems, materials or services, listed in an organization approved by an office with appropriate authority to issue directives. The manufacturer accepts by this list, that the systems, materials or services **B 12** include the appropriate standards. The term "listed" in case of personnel protective sprinklers means that the systems were tested in Underwriter' Laboratories and the requirements of NFPA **B** 13 13R of National Fire Protection Association (NFPA), VDS and DVGW are fulfilled. **Multipurpose Pipeline System** A pipeline system within an apartment which will be used for domestic as well **B 14** as also for fire protection technical purposes.

B 15

DESIGN GUIDELINES

USAREUR - Restoration Program of Troop Billets - Standard 1+1

Personnel Protective Sprinklers	SORCE	B 01
A sprinkler type corresponding to definition of quick responding sprinkler such as defined in NFPA 13 "Standard for Installation of Sprinkler Systems".		
B 13.1.3 Inspection of Sprinkler System A VDS inspection of sprinkler system is not required.	VDS	B 02
The sprinkler system shall be either tested by the local Director of Public Works (DPW) or by the European Corps of Engineers (EUD).	DPW EUD	B 03
B 13.1.4 Water Measurement An actual water measurement is required for dimensioning of sprinkler system.		B 04
 The water measurement shall display as minimum following information: Water pressure and volume flow at min. 4 operation points Provision of duct network characteristic line acc. to Hazen-Williams with graphics representation. 		B 04 B 05
B 13.1.5 Fire Localization The release of sprinkler system shall be announced to the fire alarm central station in discipline electrical.		В 06
Flow guards for exact fire localization shall be installed on each floor.		
All valves for blocking of water supply to sprinkler system shall be monitored in opened condition.		B 07
An appropriate detector shall be installed for monitoring and connected to the fire alarm central station of discipline electrical system.		B 08
B 13.1.6 Materials		
Pipe Materials Only pipes of galvanized steel are allowed in contrary to NFPA 13. They shall correspond to DIN 2440, as of DN 50 pipes acc. to DIN 2441 shall	DIN 2440 DIN 2441	B 09
be used. Pipe connections shall be accomplished acc. to DIN 2999.	DIN 2999	B 10
Sprinkler All used sprinklers shall be allowed acc. to NFPA 13 R. This requires a test by the Underwriter Laboratories Inc. (UL)	UL	B 11
B 13.1.7 Connection to Water Network		D 40
Multipurpose pipeline systems are acceptable.		B 12
The connections to city water network will be accomplished acc. to following scheme.		B 13
The connection acc. to Fig. 13.3 without intermediate container shall be preferred.		
		B 14
		B 15

SAKEUK - Kestoration Progra	am of Troop Billets - Standard 1+1		
		S	SORCE
3 13.1.7.1 Direct Co	onnection without Intermediate	e Container	B 01
Connection acc. to NFPA	13R without water meter		
ig. 13.1.7 – 1 Connec	tion to city water network with	out water meter	B 02
City water main			
,	↓		В 03
777777777777777777777777777777777777777	The state of the s	To domestic	
Main control	<i>√</i>	system	B 04
Main control valve	1000 \(\sum_{m3}\)	— Domestic shutoff	B 04
	— Water meter	valve	
Rubber-faced	Pressure gauge ▼		B 05
check valve			
Drain and test connection			В 06
	To Portable/Sprinkler		B 07
'	separation system		
	- System		
			B 08
g. 13.1.7 – 2 Connec	tion to city water network with	water meter	
			B 09
City water main			
	<u> </u>	City gate valve	B 10
	N. 4.	Water meter	B 11
	M Ba	Main control	
Pressure gauge (F	Pressure gauge	v valve To domestic system	B 42
To Portable/Sprinkler		—————————————————————————————————————	B 12
separation system	Sprinkler Rubber-faced control	Domestic shutoff	
	nd test check valve valve	valve	B 13
	Ť		B 14
			B 15
			613

City water main City water main City water main City gate valve B 02 B 03 B 04 Rubber-faced check valve Check valve Domestic shutoff valve Domestic system B 05 B 06 A separation station with allowance by VDS shall be used for connection to city water network. B 07 B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow cannot be always guaranteed, an intermediate container acc. to NFPA 13 shall be erected.
City gate valve B 02 B 03 Rubber-faced check valve Drain and test connection To Portable/Sprinkler separation system B 05 B 3.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09
Main control valve Main control valve Rubber-faced check valve Drain and test connection To Portable/Sprinkler separation system B 03 B 04 B 05 A separation station with allowance by VDS shall be used for connection to city water network. B 07 B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 If the required water volume flow cannot be always guaranteed, an NFPA 13
Main control valve Rubber-faced check valve Drain and test connection To Portable/Sprinkler separation system B 05 A separation station with allowance by VDS shall be used for connection to city water network. B 07 B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 B 09
Rubber-faced check valve Drain and test connection To Portable/Sprinkler separation system B 04 B 05 A separation station with allowance by VDS shall be used for connection to city water network. B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 03 B 04 B 05 B 06 B 07 B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System B 08 B 08 B 09 NFPA 13
Rubber-faced check valve Drain and test connection To Portable/Sprinkler separation system B 04 B 05 A separation station with allowance by VDS shall be used for connection to city water network. B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System B 08 If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 B 09
Check valve Drain and test connection To Portable/Sprinkler separation system B 05 A separation station with allowance by VDS shall be used for connection to city water network. B 06 A separation station with allowance by VDS shall be used for connection to city water network. B 07 B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 08 B 09
Domestic shutoff valve B 05 To Portable/Sprinkler separation system B 06 A separation station with allowance by VDS shall be used for connection to city water network. B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 B 09
B 05 To Portable/Sprinkler separation system B 06 A separation station with allowance by VDS shall be used for connection to city water network. B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 B 15. B 16. B 17. B 17. B 18. B 18. B 18. B 18. B 18. B 19. B 19.
To Portable/Sprinkler separation system B 06 A separation station with allowance by VDS shall be used for connection to city water network. B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 B 09
B 06 A separation station with allowance by VDS shall be used for connection to city water network. B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System B 08 B 09
A separation station with allowance by VDS shall be used for connection to city water network. B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System B 08 B 09
B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System B 08 B 09
B 13.1.7.2 Connection with Intermediate Container and Pressure Increase System If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 If the required water volume flow cannot be always guaranteed, an NFPA 13
If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 08 B 09
If the water pressure for supply of hydraulic demanding sprinkler is not sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 08 B 09 B 09
sufficient, a pressure increase system with 500 I intermediate container will be used under the condition that the required water volume flow is sufficient. B 09 If the required water volume flow cannot be always guaranteed, an NFPA 13
If the required water volume flow cannot be always guaranteed, an NFPA 13
The pressure increase system shall correspond to requirements of NFPA 20 and allowed by VDS. NFPA 20 VDS
Fig. 13.1.7 - 4 shows a possible system structure.
B 11
B 12
B 13
B 14
B 15

	Togram of Froop Emoto Chambara Fr		SORCE	
Fig. 13.1.7 - 4 Syst	tem scheme sprinkler system			B 01
Strömungswächter Flow Indicator				
Piow indicator	Dachgeschoss attic			B 02
***************************************	3. Stock fourth floor			B 03
*******	2. Stock third floor			B 04
→	Stock second floor			
***	Erdgeschoss first floor			B 05
<u>~~</u>	Dachgeschoss basement Speiseleitung Sprinkler	Feuerwehr Einspeisung Supply Fire Department		B 06
	Supply Line to Sprinkler	Testleitung ins Freie Test Line to Outside		B 07
	Tren static DiMX DN 8	o Vorlagebehälter	Druckhalte- pumpe pressure stabilizing	B 08
Wassereinspeisung Water Supply	Druck- erhöhungs- anlage pressure booster	Storage Bin 500 L	pump	B 09
	→ ·		⇒	B 10
	Kompressor Compressor	Alarmglocke Alarm Bell		B 11
				B 12
				B 13
				B 14
				B 15

USAREUR - Rest	oration Program of Troop Billets - Standard 1+1		
		SORCE	
B 13.1.8	Structure of Separation Station		B 01
	n of drinking water line and sprinkler system acc. to DIN 1988 accomplished with following described separation station.	DIN 1988	B 02
Function Des	cription:		
	ding up to closed shut-off flap no. 3. The shut-off flap no. 4 is		B 03
the alarm valve	water pressure in sprinkler pipe network shall be maintained by e no. 2 effective as check valve. The intermediate located area (2 esents the separation between drinking water and non-drinking		B 04
Fig. 13.1.8 – 1	Separation station in ready position		B 05
	Versorgungsleitung zu den Sprinklern Supply Line to Sprinklersystem		B 06
			B 07
			B 08
			B 09
Versorgungsl potable water			B 10
			B 11
	6		B 12
	7		B 13
			B 14
			B 15

SORCE **B** 01 **Extinguishing Process** The sprinklers activated by the fire heat will open in case of fire. The pressure in sprinkler pipe network will drop and the separation station switches into straight position. **B** 02 Pressure switch no. 1 recognizes the pressure drop and activates the compressed air operated actuating drive no. 6. The shut-off flap no. 7 closes and shut-off flap no. 3 opens. Now the connection from drinking water pipe B 03 network to sprinkler pipe network is provided. An electrical signal from pressure switch no. 1 via the control central station to the Fire Department will be accomplished at the same time. The alarm bell connected to separation area no. 5 will be driven by the water flow and releases a continuous alarm. **B** 04 Fig. 13.1.8 – 2 Separation station in flow position B 05 Versorgungsleitung zu den Sprinklern Supply Line to Sprinklersystem **B** 06 **B** 07 **B** 08 (2) **B** 09 Versorgungsleitung potable water Supply Line **B** 10 **B** 11 (6 **B 12 B** 13 **B** 14 **B** 15

USANZON - Nestoration Frogram of Troop Billets - Standard 1+1		
	SORCE	
Switch back into separation position If the water tapping is completed, the separation stations switches back into separation position. The switch back will be accomplished also if the water pressure in supply network drops and is lower than the pressure coming from		B 01
water column in sprinkler network. Due to this, it is prevented that water of the sprinkler network flows back into the drinking water network.		B 02
Shut-off flap no. 3 closes by switch back of actuating drive no. 6 and prevents the back flow of extinguishing water into drinking water network. Shut-off flap no. 7 opens at the same time, the water located in separation area will penetrate out of drain connection piece due to this until the entire separation area is free of water.		B 03
B 13.1.9 Pipe Routing		B 04
The sprinkler distribution pipes shall be installed orderly in corridor.		
Pipes shall not be insulated.		B 05
Fig. 13.1.9-1 up to Fig. 13.1.9-6 show a principle sketch concerning pipe routing.		В 06
		B 07
		B 08
		В 09
		B 10
		B 11
		B 12
		B 13
		B 14
		B 15

Fig. 13.1.9 – 1 Example layout type 1	B 01
MIN. 4.40m - MAX. 5.19m	B 02
1.21/81/74 1.10/2.10 1.56/49/62	B 03
C 12100 1,03000 1,000 0,8000 C C	B 04
ZIMMER N	B 05
B B SULUFT 2cm Supply air 2cm B B	B 06
ABLUFT exhaust air go	B 07
0.5500 H 0.5500 WWW AA	B 08
ABILIFT AGGREGATION AGGREGATIO	B 09
ZULUFT 2cm Supply aff 2cm Reference of doctors	B 10
	B 11
** ZIWMER MIN 3.00m	B 12
1.21.61/74 1.10/2.10 66/49/62	B 13
F G	B 14
	B 15

Fig. 13.1.9 – 2 Example layout type 2	D 04
$\langle E \rangle$ $\langle F \rangle$ $\langle G \rangle$	B 01
MIN. 5.20m - MAX. 5.99m	B 02
121/61/74 1.10/2.10 56/49/62 A	B 03
C	B 04
2 WIN. 170m	B 05
ZULIFT 2cn (61/L15) Supply uir 2cn (81/60/145) B 60/60/145	B 06
EL-VERTEILER e-distribution ABLUFT exhaust air exhaust air	B 07
0.7500 49/49/LI2	B 08
	В 09
ABLUFT exhaust air following the following t	B 10
Supply of 2cm Supply	B 11
ZIMMER MIN. 3.00m	B 12
	B 13
122/61/74 110/210 56/49/62 T	B 14
A A	B 15

Fig. 13.1.9 - 3 Example layout type 3 **B** 01 STANDARDGRUNDRIS B 02 SCHRANKR. MIN. 1.55m ZIMMER MIN. 4.30m 121/61/7 B 03 ZULUFT 2cm supply air 2cm **€**C SCHRANKR. **(c) B** 04 1.25 B 05 4 MIN. 0.90m 65 **B** 06 B 1.25 B 07 20 **B** 08 61/1.15 (D) (D) **B** 09 Ϋ́ ZULUFT 2cm **B** 10 1.21/61/74 1.10/2.10 B 11 **(**G) \bigoplus **B 12 B** 13 **B** 14 B 15

Fig. 13.1.9 – 4 Example layout type 4 **B** 01 MIN. 4.40m B 02 **B** 03 DACHSCHRÄGE HÖHE 2.20m Ϋ́ **B** 04 MIN. 1.70 B 05 EL-VERTEILER el-distribution **B** 06 55 Ϋ́ **B** 07 BAD (A) $\langle \hat{A} \rangle$ **B** 08 ZULUFT 2cm supply oir 2cm **B** 09 DACHSCHRÄGE HäHE 2.20m **B** 10 Σ ZIMMER B 11 **B** 12 **B** 13 **B** 14 B 15

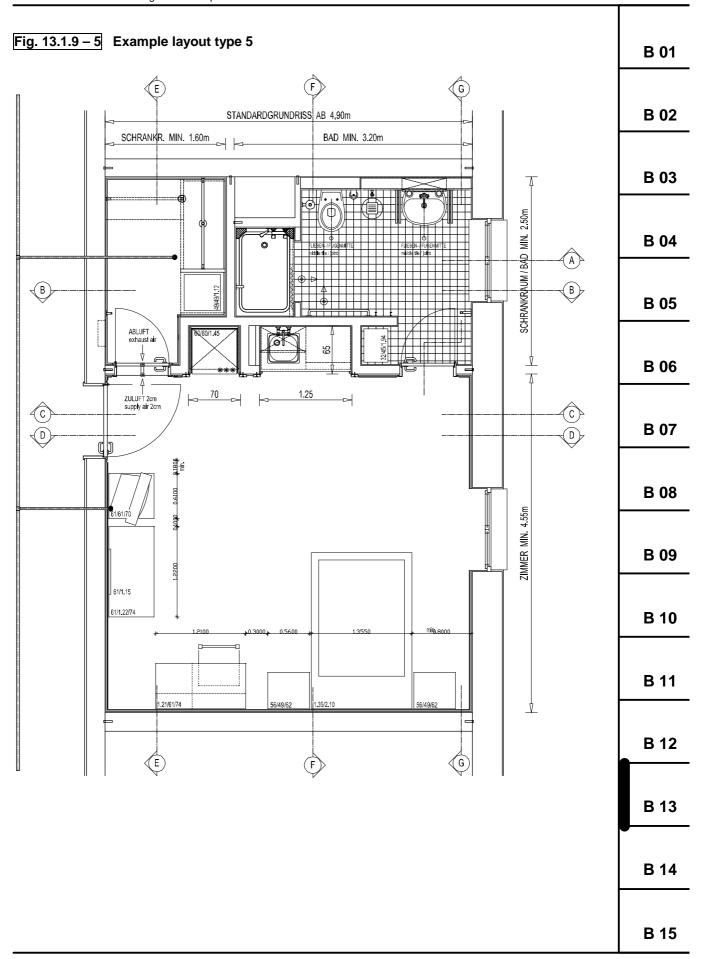


Fig. 13.1.9 – 6 Principle sketch line guide	B 01
	B 02
	B 03
F 80 F 90	B 04
F 60 ABSTELLRAUM Storage ABSTELLRAUM Storage	B 05
Seitenwandsprinkler	B 06
Seitenwandsprinkler	B 07
	B 08
Seitenwandsprinkler	B 09
Seitenwandsprinkler	B 10
	B 11
	B 12
	B 13
	B 14
	B 15

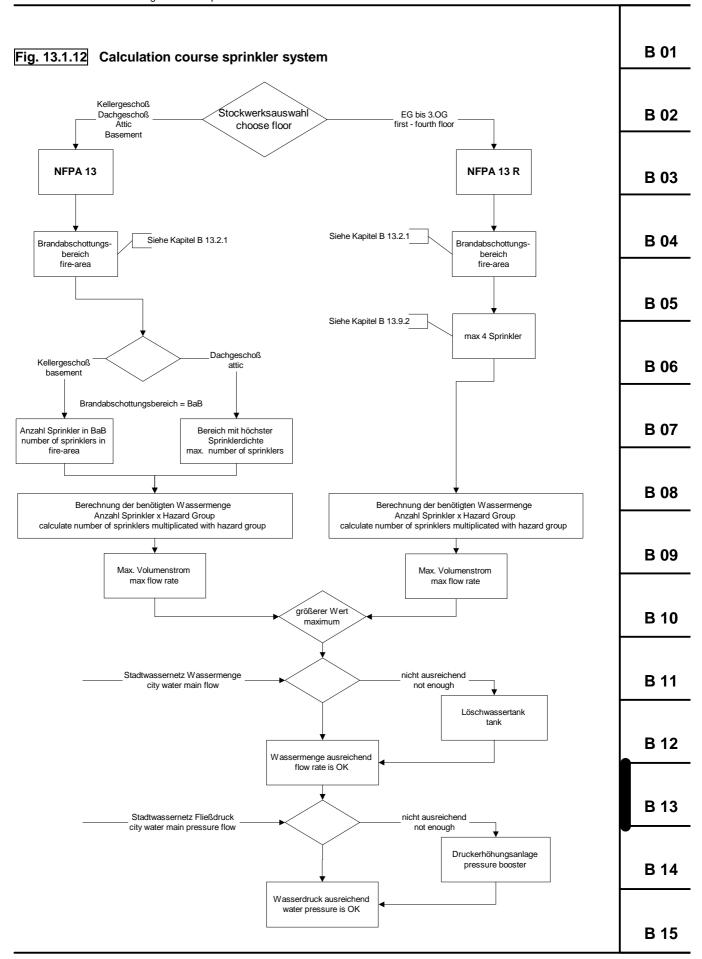
USAREUR - Restoration Program of Troop Billets - Standard 1+1

	ogram or Troop Billets - Stand			
			SORCE	
B 13.1.10 Sprinkler			B 01	
B 13.1.10.1 Sprinkler Living spaces shall be protected by listed living space sprinklers. Quick responding sprinklers in vertical and/or suspended construction shall be used in all other areas provided with sprinklers.			B 02	
Sprinklers in closet rooms, mud room shall be delivered with protective basket.			B 03	
B 13.1.10.2 Areas	to be Provided with S	prinklers		
All areas will be provide	ded with sprinklers excep	pt:		B 04
will not be used	 Attic spaces, floor and ceiling areas as well as other covered areas which will not be used for storage purposes. Open staircases outside of building 			B 05
4. Bathrooms				B 06
Possible provision o All bedrooms Office / storage	s C	side wall sprinklers ceiling sprinklers		
Corridors, staircases side wall / ceiling sprinklers Laundry ceiling sprinklers Game room ceiling sprinklers			B 07	
Mechanical rooms Storage bin rooms in a	attic c	side wall sprinklers ceiling sprinklers per storage oin room		B 08
One sprinkler shall be installed per latrine cabin in the latrines female/male basement and attic.			B 09	
B 13.1.11 Calculation of Water Flow				
B 13.1.11.1 Hazard Groups / Flow Rates			B 10	
Following flow rates must be expected for areas to be dimensioned acc. to NFPA 13.				
The sprinklers shall be occupied with various flow rates acc. to hazard groups of areas.			B 11	
The hazard groups correspond to following flow rates:			B 12	
Hazard group Light Hazard Ordinary Hazard Grou	Flow rate 4.07 l/min/m ² up 1 6.11 l/min/m ²			
Ordinary Hazard Group 1 Extra Hazard Group 1 Extra Hazard Group 2	12.22 l/min/m ²	2		B 13
				B 14
				B 15

DESIGN GUIDELINES

USAREUR - Restoration Program of Troop Billets - Standard 1+1

	·		SORCE	
Classification of hazard groups			JONGL	B 01
Area Mechanical central stations	Hazard Group Light Hazard	Remark		
Mechanical central stations	Ordinary Hazard Group 2	at gas operated boilers		B 02
Laundries	Ordinary Hazard Group 1	Dollers		
B 13.1.11.2 Areas acc. to The water flow is calculated fo		as follows:		B 03
The entire water flow is resulting of the total of maximum sprinklers (at least 4 ea) being in operation at the same time multiplied with the flow rate of sprinklers.			B 04	
B 13.1.11.3 Effective Area The effective area for the calculation of sprinklers effective at the same time corresponds to the fire separation area.				B 05
Max. 4 sprinklers are in operat	tion at the same time per fire	separation area.		B 06
B 13.1.11.3.4 Flow Rate Pe	r Sprinkler			
If only one sprinkler is installed in fire separation area, the flow rate of individual sprinkler amounts to 69 l/min.			B 07	
If several sprinklers are in o		e sprinklers shall be		
calculated with a flow rate of 4	a i/min per sprimker.			B 08
B 13.1.11.3.5 Calculation of Water Flow The water flow at above listed constructions is calculated by the sprinkler system in areas to be protected acc. to NFPA 13R as follows:			B 09	
Vs =	max. water flow			
$?SP_{MAX} =$	number of max. sp	rinklers being in me time (max. 4 ea)		B 10
V _{SP} =	<i>a</i>			
$V_S = ? SP_{MAX} *V_{SP}$				B 11
B 13.1.12 Calculation Course				B 12
Fig. 13.1.12 shows the calcu quantity and supply pressure a	lation course for determinati	ion of required water		
qualitity and supply pressure a	at the building entrance.			B 13
				B 14
				B 15



USAREUR - Restoration Program of Troop Billets - Standard 1+1	
SORCE	
B 13.1.13 Sprinkler Connection Details	B 01
Following sprinkler connection details shall be observed.	
	B 02
Fig. 13.1.13 – 1 Connection detail sprinkler	
	B 03
	B 03
Main ceiling Decke	B 04
Nipple	
4 inch. (100 mm) max length	
Reducer Hauptleitung	B 05
Reduzierung Branch line	
	B 06
Fig. 13.1.13 – 2 Connection detail sprinkler	B 07
	B 08
Reducing elbow Reduzierbogen	
Main ceiling Decke	
Nipple 4 inch. (100 mm)	B 09
max length	
Reducer Branch line	B 10
Reducer Haupteitung	
	B 11
Suspended ceiling Ceiling plate Sprinklerrosette Abgehängte Decke	
	B 12
	B 13
	B 14
	B 15

SORCE	
B 13.2 Extinguishing Facility Kitchen	B 01
An extinguishing facility shall be installed in the vapor hood additionally to the sprinkler system. The extinguishing system to be installed shall extinguish a fire on the cooking stations of a kitchen range acc. to regulations of Underwriter Laboratories, NFPA, USAF and DOD.	B 02
The pressure container will be installed in the top cabinet of vapor hood.	B 03
The extinguishing facility shall automatically turn-off the allocated range as well as announce the release to the fire alarm central station. See chapter B 14. B 14.2.4.3 Spray nozzles shall be used which will also protect the hood plenum.	B 04
A manual release shall not be provided.	
Extinguishing system Guardian 21 CENT	B 05
A system approval shall exist for the extinguishing facility and it shall be listed.	
System approval UL-approval number EX 3940.	B 06
Make Total Walter Fig. 13.2 System representation extinguishing system range	B 07
	B 08
	В 09
	B 10
	B 11
	B 12
	B 13
 A Message to fire alarm central station B Extinguishing tank C Piping with nozzles and release D Range cutoff 	B 14
	B 15

B 13.3 Dry Pipes acc. to DIN 14461: 2 Dry pipes acc. to DIN 14461 serve exclusively the Fire Department for extinguishing water conveyance and extinguishing water transportation within the building. B 02 Further notes to installation of dry lines see section B 04. All buildings will be provided with a dry pipe. Connection of stairwells The dry lines of the individual stairwells shall be connected among each other. T-pieces shall be installed on top floor and connected with each other on top of suspended ceiling of top floor. If no space exists above the suspended ceiling, the connection lines shall be installed in upper attic. If no space exists above the suspended ceiling, the connection lines shall be installed in upper attic. A sewer connection shall be provided. B 13.3.1 Water flow and Pressures The water flow at the top tapping point shall be min. 300l/min (flow pressure). DIN 14461 B 13.3.2 Extinguishing water feeding Feeding fittings in coordination with the responsible Fire Department shall be arranged at the exterior side of building. Usually, feeding fittings acc. to DIN 14461-2 with be used. The installation height is 800 mm ± 200 mm above top edge terrain. The enameling of cabinets shall be coordinated with the local Fire Department. B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed on each floor in the staircase corridor. No tapping points are installed in basement. A drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be freated in basement. A floor drain directly below the drainage possibility shall be fr			
Dry pipes acc. to DIN 14461 serve exclusively the Fire Department for extinguishing water conveyance and extinguishing water transportation within the building. Further notes to installation of dry lines see section B 04. All buildings will be provided with a dry pipe. Connection of stainwells The dry lines of the individual stainwells shall be connected among each other. T-pieces shall be installed on top floor and connected with each other on top of suspended ceiling of top floor. If no space exists above the suspended ceiling, the connection lines shall be installed in upper attic. The riser lines shall be led through the ceiling and equipped with a ventilator. A sewer connection shall be provided. B 13.3.1 Water flow and Pressures The water flow at the top tapping point shall be min. 300l/min (flow pressure). DIN 14461 B 06 B 13.3.2 Extinguishing water feeding Feeding fittings in coordination with the responsible Fire Department shall be arranged at the exterior side of building. Usually, feeding fittings acc. to DIN 14461-2 will be used. DIN 14461. B 08 B 13.3.3 Extinguishing water tapping An extinguishing water tapping point soor man above top edge terrain. The enameling of cabinets shall be coordinated with the local Fire Department. B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461. No tapping points are installed in basement. A drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be recreated in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be recreated in basement. A floor drain directly below t		SORCE	
Further notes to installation of dry lines see section B 04. All buildings will be provided with a dry pipe. Connection of stainwells The dry lines of the individual stainwells shall be connected among each other. T-pieces shall be installed on top floor and connected with each other on top of suspended ceiling of top floor. If no space exists above the suspended ceiling, the connection lines shall be installed in upper attic. The riser lines shall be led through the ceiling and equipped with a ventilator. As sewer connection shall be provided. B 13.3.1 Water flow and Pressures The water flow at the top tapping point shall be min. 300l/min (flow pressure). DIN 14461 B 13.3.2 Extinguishing water feeding Feeding fittings in coordination with the responsible Fire Department shall be arranged at the exterior side of building. Usually, feeding fittings acc. to DIN 14461-2 will be used. The installation height is 800 mm ± 200 mm above top edge terrain. The enameling of cabinets shall be coordinated with the local Fire Department. B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed in basement. A drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall be reated in basement. A floor drain directly below the drainage possibility shall be reated in basement. A floor drain directly below the drainage possibility shall be reated in basement. A floor drain directly below the drainage possibility shall be reated in basement. A floor drain directly below the drainage possibility shall be reated in basement. B 13.3.4 Materials and Installation	Dry pipes acc. to DIN 14461 serve exclusively the Fire Department for extinguishing water conveyance and extinguishing water transportation within		B 01
The dry lines of the individual stairwells shall be connected among each other. T-pieces shall be installed on top floor and connected with each other on top of suspended ceiling of top floor. If no space exists above the suspended ceiling, the connection lines shall be installed in upper attic. The riser lines shall be led through the ceiling and equipped with a ventilator. A sewer connection shall be provided. B 13.3.1 Water flow and Pressures The water flow at the top tapping point shall be min. 300l/min (flow pressure). DIN 14461 B 06 B 13.3.2 Extinguishing water feeding Feeding fittings in coordination with the responsible Fire Department shall be arranged at the exterior side of building. Usually, feeding fittings acc. to DIN 14461-2 will be used. The installation height is 800 mm ± 200 mm above top edge terrain. The enameling of cabinets shall be coordinated with the local Fire Department. B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed on each floor in the staircase corridor. B 19.0 DIN 14461 B 10 B 10 B 10 B 10 B 10 B 10 B 11 B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilators Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	Further notes to installation of dry lines see section B 04.	В 04	B 02
The riser lines shall be led through the ceiling and equipped with a ventilator. A sewer connection shall be provided. B 13.3.1 Water flow and Pressures The water flow at the top tapping point shall be min. 300l/min (flow pressure). DIN 14461 B 06 B 13.3.2 Extinguishing water feeding Feeding fittings in coordination with the responsible Fire Department shall be arranged at the exterior side of building. Usually, feeding fittings acc. to DIN 14461-2 will be used. The installation height is 800 mm ± 200 mm above top edge terrain. B 08 The enameling of cabinets shall be coordinated with the local Fire Department. B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed on each floor in the staircase corridor. DIN 14461 B 10 B 10 B 10 B 11 B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	The dry lines of the individual stairwells shall be connected among each other. T-pieces shall be installed on top floor and connected with each other on top of suspended ceiling of top floor. If no space exists above the suspended ceiling, the connection lines shall be	NFPA 14	
The water flow at the top tapping point shall be min. 300l/min (flow pressure). The water flow at the top tapping point shall be min. 300l/min (flow pressure). The entire system (incl. aerator and ventilator) shall be dimensioned to PN 16. B 13.3.2 Extinguishing water feeding Feeding fittings in coordination with the responsible Fire Department shall be arranged at the exterior side of building. Usually, feeding fittings acc. to DIN 14461-2 will be used. The installation height is 800 mm ± 200 mm above top edge terrain. The enameling of cabinets shall be coordinated with the local Fire Department. B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed on each floor in the staircase corridor. No tapping points are installed in basement. A drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall not be provided. The tapping points shall be installed flush mounted. B 10 B 11 B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	The riser lines shall be led through the ceiling and equipped with a ventilator.		D.05
B 13.3.2 Extinguishing water feeding Feeding fittings in coordination with the responsible Fire Department shall be arranged at the exterior side of building. Usually, feeding fittings acc. to DIN 14461-2 will be used. The installation height is 800 mm ± 200 mm above top edge terrain. The enameling of cabinets shall be coordinated with the local Fire Department. B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed on each floor in the staircase corridor. No tapping points are installed in basement. A drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall not be provided. The tapping points shall be installed flush mounted. B 10 B 11 B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.		DIN 14461	B 05
Feeding fittings in coordination with the responsible Fire Department shall be arranged at the exterior side of building. Usually, feeding fittings acc. to DIN 14461-2 will be used. The installation height is 800 mm ± 200 mm above top edge terrain. The enameling of cabinets shall be coordinated with the local Fire Department. B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed on each floor in the staircase corridor. No tapping points are installed in basement. A drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall not be provided. The tapping points shall be installed flush mounted. B 10 B 11 B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	The entire system (incl. aerator and ventilator) shall be dimensioned to PN 16.		B 06
The enameling of cabinets shall be coordinated with the local Fire Department. B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed on each floor in the staircase corridor. No tapping points are installed in basement. A drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall not be provided. The tapping points shall be installed flush mounted. B 10 B 10 B 10 B 10 B 11 B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	Feeding fittings in coordination with the responsible Fire Department shall be arranged at the exterior side of building. Usually, feeding fittings acc. to	DIN 14461	B 07
B 13.3.3 Extinguishing water tapping An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed on each floor in the staircase corridor. No tapping points are installed in basement. A drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall not be provided. The tapping points shall be installed flush mounted. B 10 B 10 B 10 B 10 B 10 B 11 B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	The installation height is 800 mm ± 200 mm above top edge terrain.		B 08
An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting DIN 14461-5 shall be installed on each floor in the staircase corridor. No tapping points are installed in basement. A drainage possibility shall be created in basement. A floor drain directly below the drainage possibility shall not be provided. The tapping points shall be installed flush mounted. B 11 B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	The enameling of cabinets shall be coordinated with the local Fire Department.		
created in basement. A floor drain directly below the drainage possibility shall not be provided. The tapping points shall be installed flush mounted. B 11 B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	An extinguishing water tapping point acc. to DIN 14461-2 with tapping fitting	DIN 14461	B 09
B 13.3.4 Materials and Installation Parts Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	created in basement. A floor drain directly below the drainage possibility shall		B 10
Pipe Material Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	The tapping points shall be installed flush mounted.		B 11
Threaded pipe acc. to DIN 2440 will be used as pipe material. Plastic pipes are not acceptable. Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	B 13.3.4 Materials and Installation Parts		
Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.		DIN 2440	B 12
Pipe Aerator and Ventilator Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity shall be installed.	Plastic pipes are not acceptable.		B 13
	Aerators and ventilators DN 50 PN 16 with up to 1400 l/min ventilation capacity		
			B 14
B 15			B 15

	SORCE	
B 13.4 Hydrants in Exterior Area Hydrants shall be listed. See chapter B 13.1.2.	B 13.1.2	B 01
B 13.4.1 Accepted Hydrants Hydrants shall be renovated in the scope of project.		B 02
B 13.4.2 Accomplishment of Hydrants		
The exact accomplishment of hydrants shall be coordinated with the responsible Fire Department. Usually, hydrants with drop jacket and rated break point shall be installed.		B 03
The connection to hydrants shall be accomplished in coordination with responsible Fire Department. Usually, the hydrants are equipped with 2 B-connections acc. to DIN 14318.	DIN 14381	B 04
The connection values of hydrants shall be 150 mm.		B 05
B 13.4.3 Water Supply		
A shut-off device shall be installed in front of hydrant. The distance between center shut-off valve and center hydrant shall not be		B 06
below 1 m.		
See also Fig. 13.16.		B 07
Fig. 13.4 Connection above ground hydrant		
> 1m		B 08
\		B 09
		B 10
		B 11
Gefälle / Slope Rasensteine / Stone		B 12
		B 13
		B 14
Stagnant water shall be avoided.		
		B 15

USANEON - Nesturation Frogram of Troop Billets - Standard 1+1		
	SORCE	
B 13.4.4 Location of Hydrants The terrain around the hydrant shall be accomplished in such a manner that surface water flows away from hydrant.		B 01
Hydrants shall not be installed closer than 1 m to road edge and not more distant than 2 m from road edge away.		B 02
Hydrants at parking areas shall be provided with drive protection.		B 03
B 13.4.5 Quantity of Hydrants Hydrants shall be installed in sufficient quantity so that the required extinguishing water requirement can be covered without tapping more than 4700 l/min water per single hydrant.		B 04
Furthermore, the required hose lengths shall not exceed 110 m.		B 05
		B 06
		B 07
		B 08
		B 09
		B 10
		B 11
		B 12
		B 13
		B 14
		<u> </u>
		B 15